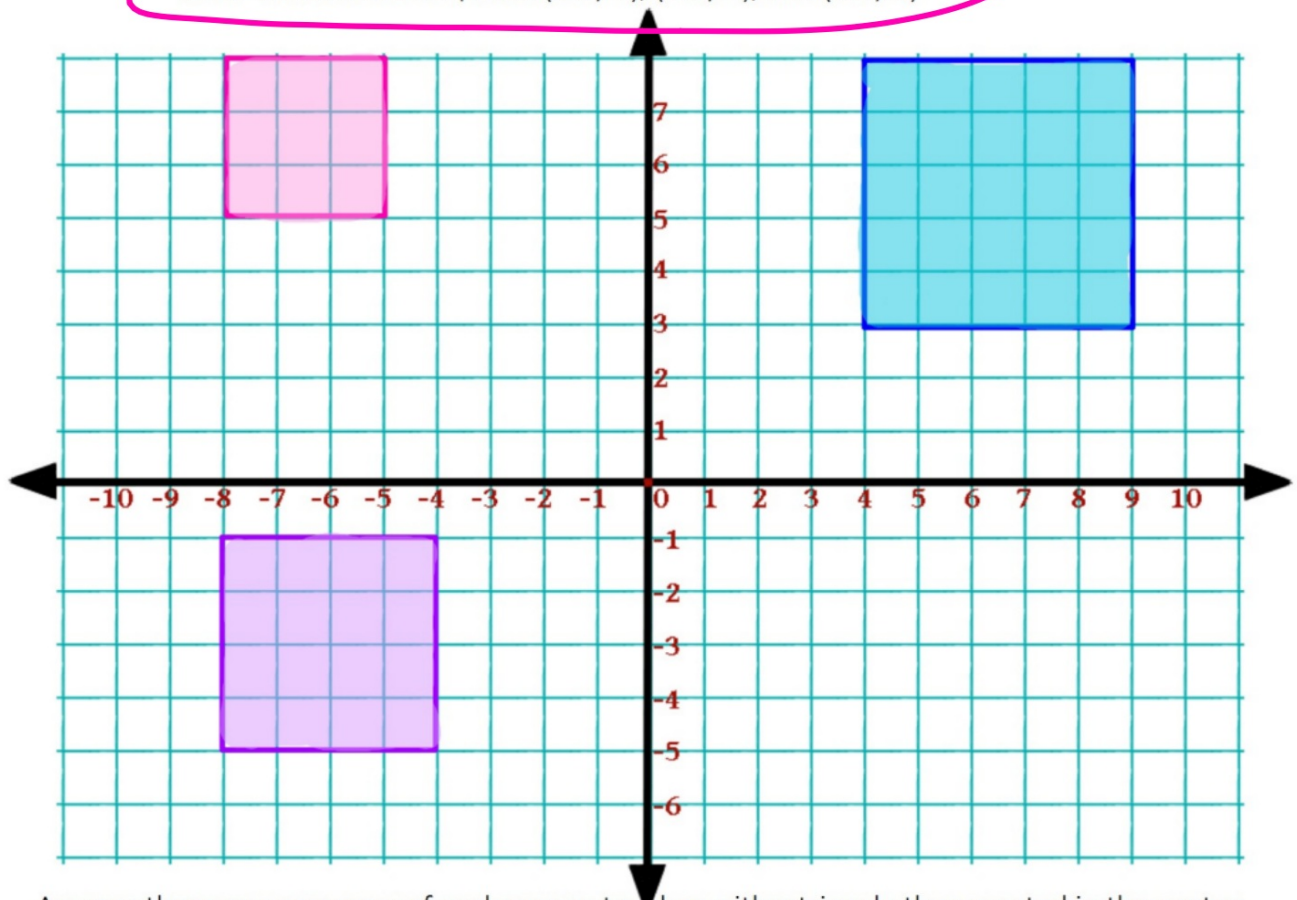
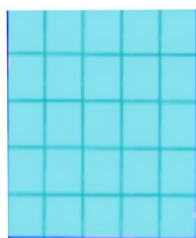


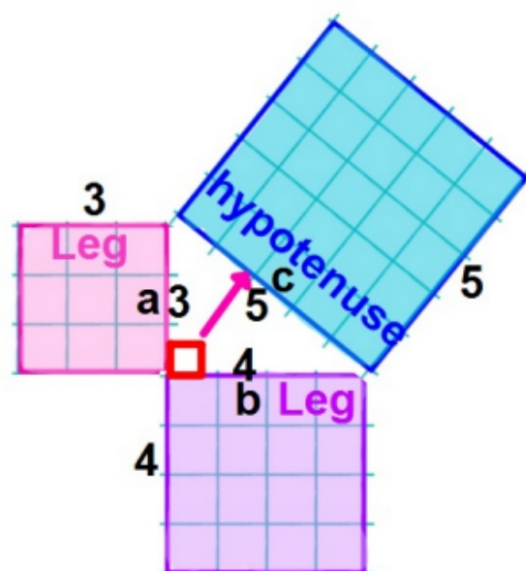
Color and cut out 3 squares (3 by 3), (4 by 4), and (5 by 5)



Arrange them so one corner of each square touches with a triangle then created in the center.



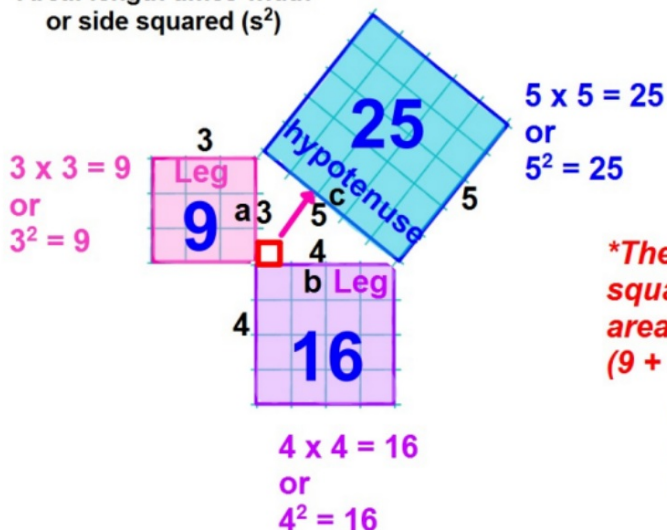
What is the relationship
between the areas of
all the squares?



*Can you come up with a
formula that would work
everytime to prove this?*

Pythagorean Theorem

Area: length times width
or side squared (s^2)



What is the relationship
between the areas of
all the squares?

**The areas of the two smaller
squares added together equals the
area of the largest square.
(9 + 16 = 25)*

Can you come up with a
formula that would work
everytime to prove this?

$$a^2 + b^2 = c^2 \text{ or } c^2 = a^2 + b^2$$

$$3^2 + 4^2 = 5^2$$

$$9 + 16 = 25$$

$$25 = 25$$

Proves it's a
right triangle!

**Congratulations you just proved the
Pythagorean Theorem!**

Discovered by the Greek Mathematician Pythagoras.

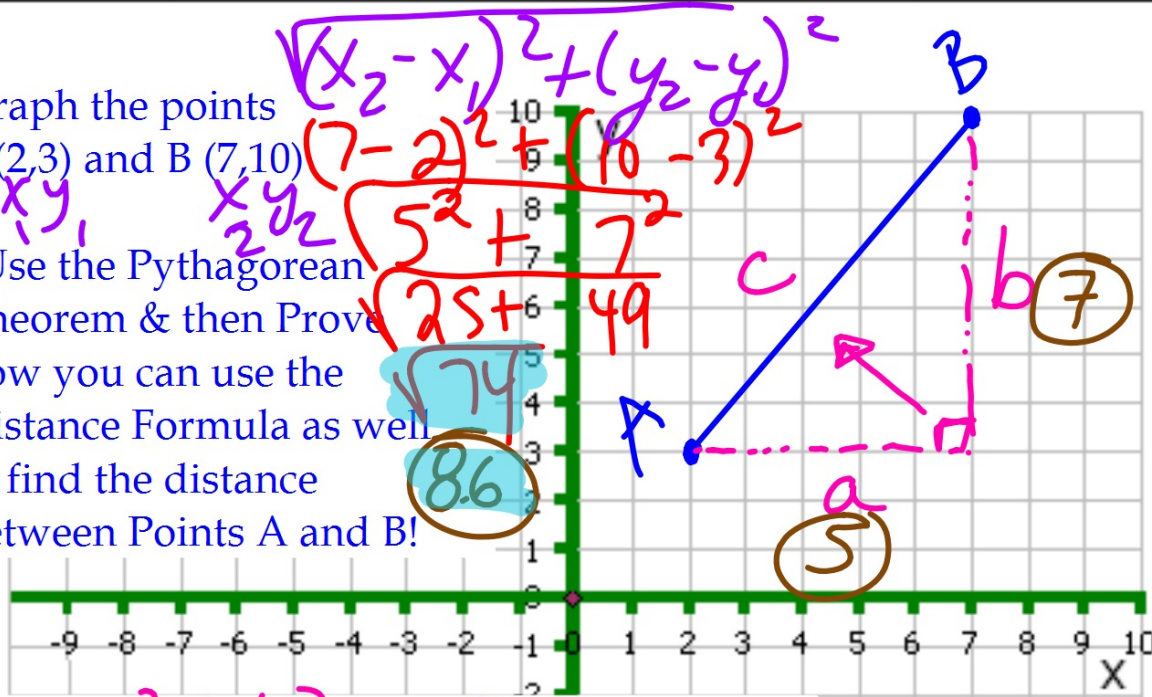
4
9
16
25
36
49

Graph the points

A(2,3) and B(7,10)

*Use the Pythagorean Theorem & then Prove

how you can use the Distance Formula as well to find the distance between Points A and B!



$$a^2 + b^2 = c^2$$

$$5^2 + 7^2 = c^2$$

$$25 + 49 = c^2$$

$$74 = c^2$$

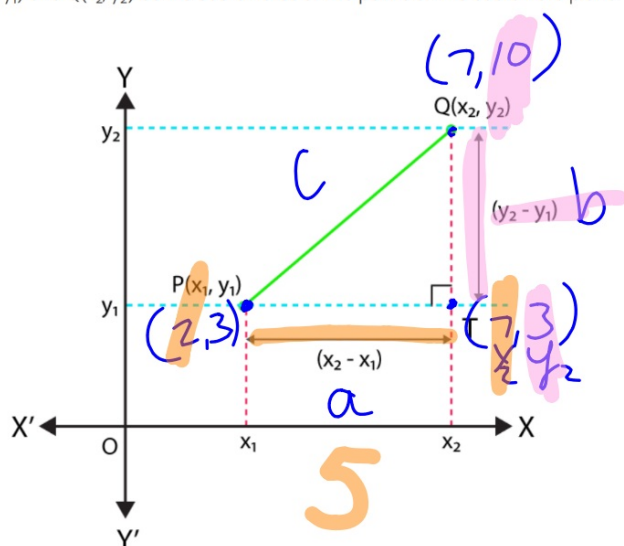
$$74 = c^2$$

$$\sqrt{74} = c$$

$$8.6 = c$$

Distance Formula Derivation

Let $P(x_1, y_1)$ and $Q(x_2, y_2)$ be the coordinates of two points on the coordinate plane.



Pythagorean Theorem

By Pythagoras's Theorem,

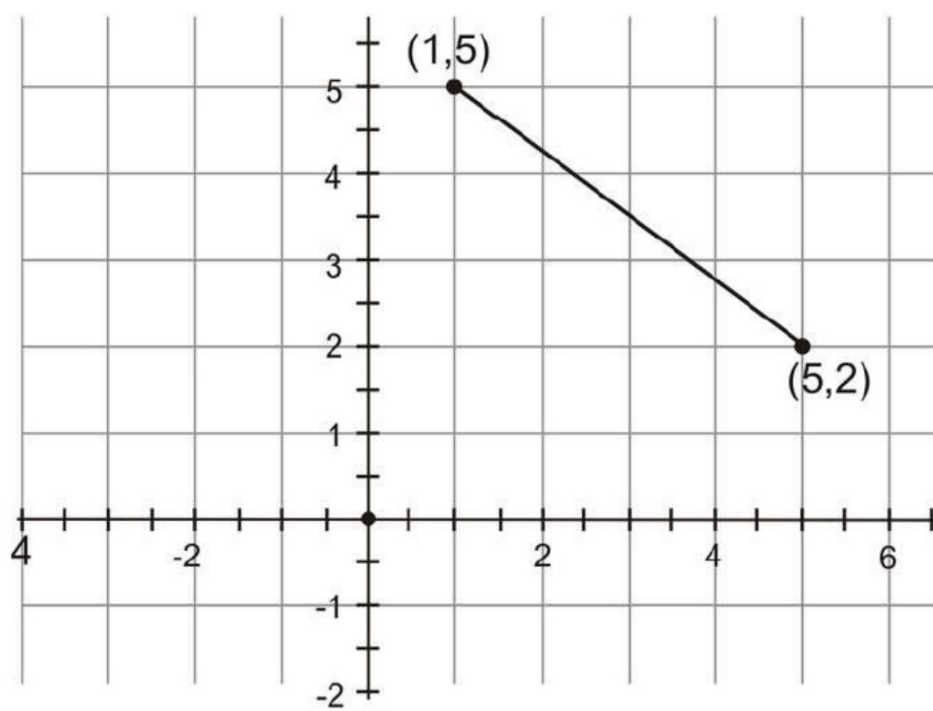
$$PQ^2 = PT^2 + QT^2$$

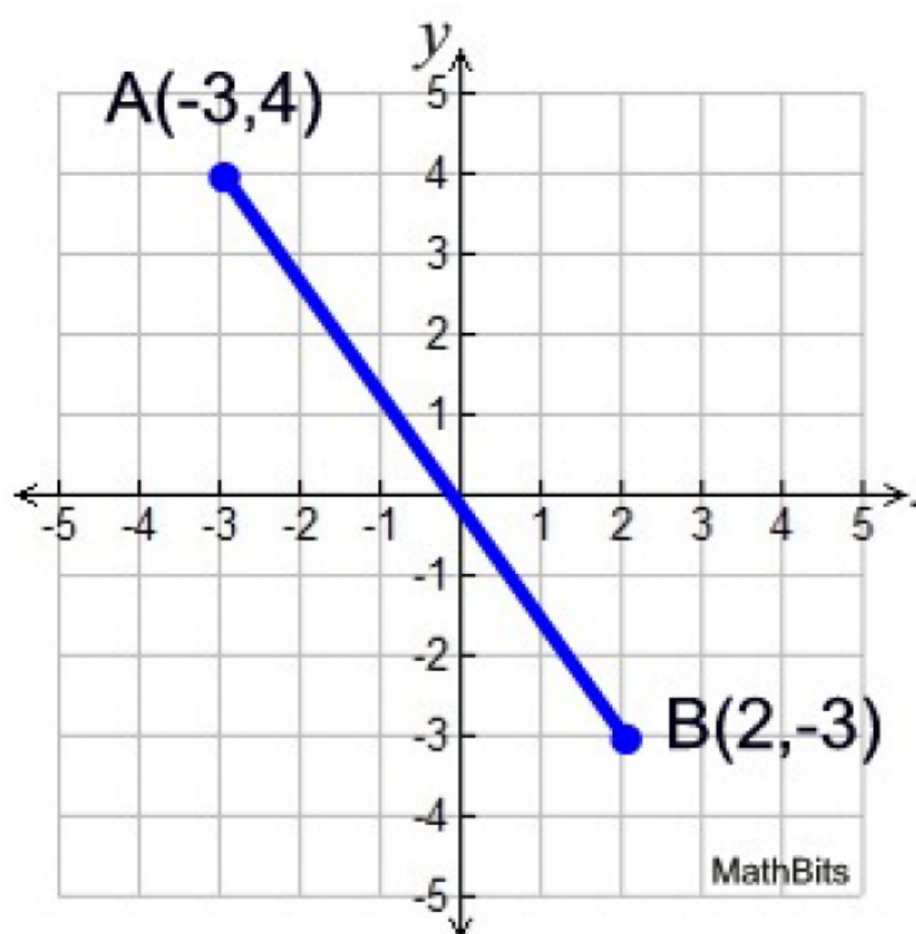
$$c^2 = a^2 + b^2$$

$$c^2 = (x_2 - x_1)^2 + (y_2 - y_1)^2$$

$$c = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

distance formula





$$a^2 + b^2 = c^2$$

$$2^2 + 4^2 = c^2$$

$$4 + 16 = c^2$$

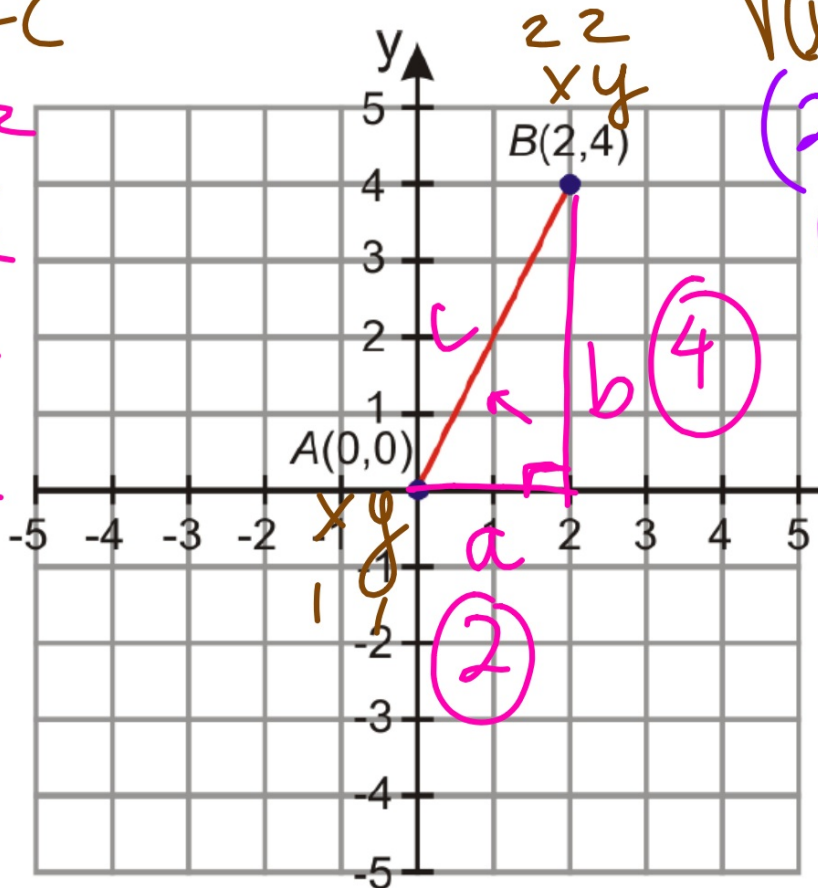
$$20 = c^2$$

$$\sqrt{20} = c$$

$$\sqrt{4 \cdot 5}$$

$$2\sqrt{5}$$

$$4.5$$



$$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$(2 - 0)^2 + (4 - 0)^2$$

$$\sqrt{2^2 + 4^2}$$

$$\sqrt{4 + 16}$$

$$\sqrt{20}$$

$$\sqrt{4 \cdot 5}$$

$$2\sqrt{5}$$

$$4.5$$